

RN02079G1

Serial number: 10/518,685

AMENDMENT

REMARKS/ARGUMENTS

It is asserted that these amendments do not add new matter and are supported by the specification and claims as originally filed. Entry of these claims is respectfully requested.

Claims 20-29 have been rejected.

Claim 20 has been amended.

Claims 21-29 are kept unchanged.

Claims 20-29 are pending in the application.

Objected claim 20 has been amended and the flow diagram has been cancelled and replaced with the chemical formulae of the products so obtained and already set forth in said flow diagram.

Claims 20-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Urbaniak et al..

The claimed invention relates to a continuous high-performance process for preparing an organodialkylalkoxysilane $R_1O-(R_2R_3)Si-(CH_2)_3-A$ (in particular ethoxydimethyl-3-chloropropylsilane) by:

continuously contacting an alcohol R_1-OH (in particular ethanol) in countercurrent with a silane $Hal-(R_2R_3)Si-(CH_2)_3-A$ (in particular Hal being Cl, A being Cl, R_2 and R_3 being CH_3 , i.e. the silane being the 3-chloropropyldimethylchlorosilane) with stripping of the product $H-Hal$ formed (in particular HCl) and recovering of the organodialkylalkoxysilane $R_1O-(R_2R_3)Si-(CH_2)_3-A$ formed in the reactor (in particular ethoxydimethyl-3-chloropropylsilane).

The process according to the present invention provides organodialkylalkoxysilanes

(in particular ethoxydimethyl-3-chloropropylsilanehigh) with high yields.

In prior art, the 3-chloropropyldimethylchlorosilane may be ethoxylated into ethoxydimethyl-3-chloropropylsilane in the presence of a base. The use of a base allows the acid formed to be stoichiometrically neutralized. However, the use of a base and the lengthening and complication of the corresponding process that are associated with its use and its possible removal, constitute a disadvantage. In the absence of a base, the reaction leads to performance levels which are unsatisfactory under the conditions conventionally used, i.e. by running ethanol into an initial charge of 3-chloropropyldimethylchlorosilane, which is a batch reactor process. The batch reactor process gives good results only if the raw material is dichloropropylmethylchlorosilane or trichloropropylchlorosilane, but not if the raw material is 3-chloropropyldimethylchlorosilane. As a matter of fact, in such a batch reactor process, the specificity of the dimethylchlorosilane group leads to a low reactivity with respect to ethanol and, consequently, gives rise to more substantial formation of secondary products.

On the contrary, the process of the invention is a high-performance process, which can be carried out in the absence of a base. The conversion obtained is generally greater than 90 % and may reach 100 %, and the selectivity is also high.

According to the invention, the continuous process therefore makes it possible to carry out, in a countercurrent reactor, both the alkoxylation reaction and the separation of

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the stream of alkanol R₁-OH and of H-Hal (in particular HCl) from the stream of silanes, and then, optionally, separate the alkanol from H-Hal.

The reference (Urbaniak et al) cited by the Examiner only mentions that (bottom of page 698) ethoxydimethyl-3-chloropropylsilane is "prepared by alcoholysis of corresponding chlorosilanes with anhydrous ethanol in petroleum ether and titration of the reaction mixture with glicidylphenylether to achieve a neutral medium".

No more information is mentioned in this reference about the preparation of ethoxydimethyl-3-chloropropylsilane.

The technical content of this sentence thus mentioned by Urbaniak et al does not correspond to the presently claimed process, but rather to the above-described prior art process. Moreover, this reference does not teach a stripping of HCl formed in the taught process. Urbaniak teaches, on the contrary, that the reaction medium is neutralized by adding glicidylphenylether.

It should be stressed out that this reference is directed to the synthesis of siloxyphosphines.

Nothing in this reference or in the prior art leads the one of ordinary skill in the art to use a continuous process and the contacting of the reactants in a countercurrent, without the necessity of employing a base, and with the stripping of H-Hal formed.

There is no motivation at all or a single clue in Urbaniak et al. disclosure, to retrieve or suggest the claimed process. It cannot be merely asserted that a variation of the reaction conditions would be a well-known chemical practice in such a process.